

## ABSTRACT

The invention relates to an injection molding apparatus including a mold block, a nozzle, a gating system and a slug heater. The mold block defines a mold cavity having a mold cavity inlet. The nozzle has a nozzle inlet. The nozzle inlet is fluidically connectable downstream from a melt source. The nozzle inlet is upstream from the mold cavity inlet. A melt flow passage extends from the nozzle inlet to the mold cavity inlet. The gating system includes a valve pin and an actuator. The valve pin is movable between an open position wherein melt flow is permitted into the mold cavity, and a closed position wherein the valve pin blocks the melt flow passage to prevent melt flow into the mold cavity. The actuator is operatively connected to the valve pin to move the valve pin between the open and closed positions. At least one of the mold block and the valve pin includes a cooling system for selectively solidifying melt to form a slug immediately upstream from the valve pin when the valve pin is in the closed position. In use the slug blocks the melt flow passage to substantially prevent melt leakage past the slug when the valve pin is positioned away from the slug.